

data/Chi2Merge.csv

May 9, 2011

1 Tables of Friedman, Aligned Friedman, Bonferroni-Dunn, Holm, Hochberg and Hommel Tests

1

Table 1: Average Rankings of the algorithms (Friedman)

Algorithm	Ranking
C45Rules $_G M_t st$	6.250000000000001
OCEC $_G M_t st$	4.011904761904761
Ripper $_G M_t st$	4.761904761904759
Gassist $_G M_t st$	3.999999999999982
REGAL $_G M_t st$	5.011904761904762
UCS $_G M_t st$	4.333333333333332
REGALTC $_G M_t st$	5.345238095238096
SIA $_G M_t st$	6.0
Oblique-DT $_G M_t st$	5.285714285714285

Friedman statistic (distributed according to chi-square with 8 degrees of freedom: 29.34920634920604. P-value computed by Friedman

Test: 2.753168507018122E-4.

Iman and Davenport statistic (distributed according to F-distribution with 8 and 328 degrees of freedom: 3.9240643925668572. P-value computed by Iman and Davenport Test: 1.9082289275156278E-4.

Table 2: Average Rankings of the algorithms (Aligned Friedman)

Algorithm	Ranking
C45Rules $_G M_t st$	239.9880952380952
OCEC $_G M_t st$	145.32142857142858
Ripper $_G M_t st$	181.78571428571433
GAssist $_G M_t st$	155.83333333333333
REGAL $_G M_t st$	192.27380952380943
UCS $_G M_t st$	159.35714285714292
REGALTC $_G M_t st$	190.25
SIA $_G M_t st$	227.16666666666669
Oblique-DT $_G M_t st$	213.52380952380955

Aligned Friedman statistic (distributed according to chi-square with 8 degrees of freedom): 38.172948284717464. P-value computed by Aligned Friedman Test: 6.994169786667115E-6.

Table 3: Average Rankings of the algorithms (Quade)

Algorithm	Ranking
C45Rules $_G M_{t,st}$	6.260797342192693
OCEC $_G M_{t,st}$	3.8864894795127363
Ripper $_G M_{t,st}$	4.395348837209303
GAssist $_G M_{t,st}$	4.264673311184938
REGAL $_G M_{t,st}$	4.802879291251387
UCS $_G M_{t,st}$	4.281284606866001
REGALTC $_G M_{t,st}$	5.273532668881507
SIA $_G M_{t,st}$	6.231450719822811
Oblique-DT $_G M_{t,st}$	5.603543743078627

Quade statistic (distributed according to F-distribution with 8 and 328 degrees of freedom: 3.5169987375908893. P-value computed by Quade Test: 6.42920889759507E-4.

Table 4: Contrast Estimation

C45Rules $G_{Mf, st}$	C45Rules $G_{Mf, st}$	OCBEG Mf, st	RipperG Mf, st	GAssist $G_{Mf, st}$	REGAL $G_{Mf, st}$	UCSG Mf, st	REGALTCG Mf, st	SIA $G_{Mf, st}$	Oblique-DTG Mf, st
0.00000000	-0.02320667	0.00000000	-0.01484167	-0.02284944	-0.01440944	-0.02137056	-0.01156056	-0.00372222	-0.01054444
0.02320667	0.00000000	0.00836500	0.00836500	0.00035722	0.00879722	0.00183611	0.01164611	0.01948444	0.01266222
0.01484167	-0.00836500	-0.00000000	0.00000000	-0.00800778	0.00043222	-0.00652889	0.00328111	0.01111944	0.00429722
0.02284944	-0.00035722	-0.00836500	0.00800778	0.00000000	0.00844000	0.00147889	0.01128889	0.01912722	0.01230500
0.01440944	-0.00879722	-0.00043222	-0.00043222	-0.00844000	0.00000000	-0.00696111	0.00284889	0.01065722	0.00386500
0.02137056	-0.00183611	0.00652889	0.00652889	-0.00147889	0.00696111	0.00000000	0.00981000	0.01764833	0.01082611
0.01156056	-0.01164611	-0.00328111	-0.00328111	-0.01128889	-0.00284889	-0.00981000	0.00000000	0.00783833	0.00101611
0.00372222	-0.01948444	-0.01111944	-0.01111944	-0.01912722	-0.01068722	-0.01764833	-0.00783833	0.00000000	-0.00682222
0.01054444	-0.01266222	-0.00429722	-0.00429722	-0.01230500	-0.00386500	-0.01082611	-0.00783833	0.00682222	0.00000000

Table 5: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (FRIEDMAN)

i	algorithm	$z = (R_0 - R_i) / SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
8	C45Rules $_G M_t st$	3.7649701194033445	1.6656900008977425E-4	0.00625	0.0063911150954545011	0.006574125233361166	0.0063911150954545011	8.364836713925
7	SIA $_G M_t st$	3.3466401061363054	8.179733199943827E-4	0.0071428571428571435	0.0073008331979014655	0.0075128293213784685	0.012741455098566168	8.364836713925
6	REGALTC $_G M_t st$	2.251013880913112	0.024384658221502556	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490195694	8.364836713925
5	Oblique-DT $_C M_t st$	2.15141149680191	0.0314437345458923	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	8.364836713925
4	REGAL $_G M_t st$	1.693240529890394	0.09040969281158581	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	8.364836713925
3	Ripper $_G M_t st$	1.2749105166233516	0.2023409163050438	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	8.364836713925
2	UCS $_G M_t st$	0.557733510227181	0.57699916224874	0.025	0.025320565519103666	0.025	0.04388935252272508	8.364836713925
1	OCEC $_G M_t st$	0.01992047682224131	0.9841068102435421	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .
 Holm's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.
 Hochberg's procedure rejects those hypotheses that have a p-value $\leq 0.0071428571428571435$.
 Hommel's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.
 Holland's procedure rejects those hypotheses that have a p-value $\leq 0.008512444610847103$.
 Rom's procedure rejects those hypotheses that have a p-value $\leq 0.0075128293213784685$.
 Finner's procedure rejects those hypotheses that have a p-value $\leq 0.019051173490195694$.
 Li's procedure rejects those hypotheses that have a p-value $\leq 8.364836713925226E - 4$.

Table 6: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (ALIGNED FRIEDMAN)

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
8	C45Rules $_G M_t st$	3.97037795483887	7.1758707018343335E-5	0.00625	0.006391150954545011	0.006574125233361166	0.006391150954545011	0.0179314225645
7	SIA $_G M_t st$	3.4326393912873794	5.97736533572638E-4	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.012741455098566168	0.0179314225645
6	Oblique-DT $_G M_t st$	2.8604496105724215	0.004230407751855186	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490195694	0.0179314225645
5	REGAL $_G M_t st$	1.969211601343621	0.04892879721615184	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	0.0179314225645
4	REGALTC $_G M_t st$	1.8843317909408823	0.05952010978760457	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	0.0179314225645
3	Ripper $_G M_t st$	1.5293344662564732	0.12618154944240492	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	0.0179314225645
2	UCS $_G M_t st$	0.588664497931395	0.5560850483128712	0.025	0.025320565519103666	0.025	0.04388935252272508	0.0179314225645
1	GAssist $_G M_t st$	0.44087572109188927	0.6593029712726057	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.0179314225645

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

Holm's procedure rejects those hypotheses that have a p-value ≤ 0.01 .

Hochberg's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.

Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.01 .

Holland's procedure rejects those hypotheses that have a p-value $\leq 0.010206218313011495$.

Rom's procedure rejects those hypotheses that have a p-value $\leq 0.008764162596519848$.

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.025320565519103666$.

Li's procedure rejects those hypotheses that have a p-value ≤ 0.0179314225645997 .

Table 7: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (QUADE)

i	algorithm	$z = (R_0 - R_i) / SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
8	C45Rules $_G M_t st$	1.7304396003168112	0.08355176378863968	0.00625	0.006391150954545011	0.006574125233361166	0.006391150954545011	0.01142977524616
7	SIA $_G M_t st$	1.709051237719609	0.08744145889349632	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.012741455098566168	0.01142977524616
6	Oblique-DT $_G M_t st$	1.2514209889417975	0.21078092358267855	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490195694	0.01142977524616
5	REGALTC $_G M_t st$	1.0109027982261218	0.31206295462639877	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	0.01142977524616
4	REGAL $_G M_t st$	0.6678818886483974	0.5042089892228903	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	0.01142977524616
3	Ripper $_G M_t st$	0.37086613635521176	0.710737238590261	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	0.01142977524616
2	UCS $_G M_t st$	0.28773401008402055	0.773550354190145	0.025	0.025320565519103666	0.025	0.0438893525272508	0.01142977524616
1	GAssist $_G M_t st$	0.2756273896959833	0.7828342703229381	0.05	0.050000000000000044	0.05	0.050000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

Holm's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

Holland's procedure rejects those hypotheses that have a p-value $\leq 0.006391150954545011$.

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.006391150954545011$.

Li's procedure rejects those hypotheses that have a p-value $\leq 0.011429775246161157$.

Table 8: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	C45Rules $_G M_t st$	1.6656900008977425E-4	0.001332552000718194	0.001332552000718194	0.001332552000718194	0.001332552000718194
2	SIA $_G M_t st$	8.179733199943827E-4	0.006543786559955062	0.005725813239960679	0.005725813239960679	0.005725813239960679
3	REGALTC $_G M_t st$	0.024384658221502556	0.19507726577202045	0.14630794932901534	0.14630794932901534	0.12192329110751278
4	Oblique-DT $_G M_t st$	0.0314437345458923	0.2515498763671384	0.1572186727294615	0.1572186727294615	0.1572186727294615
5	REGAL $_G M_t st$	0.09040969281158581	0.7232775424926865	0.36163877124634325	0.36163877124634325	0.36163877124634325
6	Ripper $_G M_t st$	0.2023409163050438	1.6187273304403504	0.6070227489151314	0.6070227489151314	0.6070227489151314
7	UCS $_G M_t st$	0.57699916224874	4.61599329798992	1.15399832449748	0.9841068102435421	0.9841068102435421
8	OCEC $_G M_t st$	0.9841068102435421	7.872854481948337	1.15399832449748	0.9841068102435421	0.9841068102435421

Table 9: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	C45Rules $_G M_t st$	1.6656900008977425E-4	0.0013317753929783516	0.0012668529589647945	0.0013317753929783516	0.010371824546982199
2	SIA $_G M_t st$	8.179733199943827E-4	0.0057117816920486675	0.005443843357832994	0.003267880986575822	0.04894771933301192
3	REGALTC $_G M_t st$	0.024384658221502556	0.13767351204724054	0.13911573383625628	0.06371157108547687	0.6054111489483127
4	Oblique-DT $_G M_t st$	0.0314437345458923	0.14763761818125987	0.14951349313050089	0.06371157108547687	0.6642538569902651
5	REGAL $_G M_t st$	0.09040969281158581	0.31548448676659313	0.344828387362425	0.1406831693290318	0.8504914507253852
6	Ripper $_G M_t st$	0.2023409163050438	0.49248142039969267	0.6070227489151314	0.2602418582198016	0.9271736666496163
7	UCS $_G M_t st$	0.57699916224874	0.8210702912617323	0.9841068102435421	0.6259226586635817	0.9731938020406129
8	OCEC $_G M_t st$	0.9841068102435421	0.9841068102435421	0.9841068102435421	0.9841068102435421	0.9841068102435421

Table 10: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hom}
1	C45Rules $_G M_t st$	7.175870701834335E-5	5.740696561467468E-4	5.740696561467468E-4	5.740696561467468E-4	5.740696561467468E-4
2	SIA $_G M_t st$	5.97736533572638E-4	0.004781892268581104	0.004184155735008466	0.004184155735008466	0.004184155735008466
3	Oblique-DT $_G M_t st$	0.004230407751855186	0.03384326201484149	0.025382446511131116	0.025382446511131116	0.025382446511131116
4	REGAL $_G M_t st$	0.04892879721615184	0.3914303772921474	0.2446439860807592	0.2380804391504183	0.19571518886460737
5	REGALTC $_G M_t st$	0.05952010978760457	0.4761608783008366	0.2446439860807592	0.2380804391504183	0.2380804391504183
6	Ripper $_G M_t st$	0.12618154944240492	1.0094523955392394	0.3785446483272148	0.3785446483272148	0.3785446483272148
7	UCSG $_G M_t st$	0.5560850483128712	4.44868038650297	1.1121700966257424	0.6593029712726057	0.6593029712726057
8	GAssist $_G M_t st$	0.6593029712726057	5.274423770180846	1.1121700966257424	0.6593029712726057	0.6593029712726057

Table 11: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	C45Rules $_G M_t st$	7.175870701834335E-5	5.739254961005802E-4	5.45766200603666E-4	5.739254961005802E-4	2.1057887243312943E-4
2	SIA $_G M_t st$	5.97736533572638E-4	0.0041766660137070631	0.0039781053715124476	0.0023888032546401927	0.0017513791432329359
3	Oblique-DT $_G M_t st$	0.004230407751855186	0.02511551064599482	0.02413469458870511	0.011241355072461157	0.01226463106279945
4	REGAL $_G M_t st$	0.04892879721615184	0.22184670642085047	0.22701352958323553	0.09546356723528437	0.12557893742711312
5	REGALTC $_G M_t st$	0.05952010978760457	0.22184670642085047	0.22701352958323553	0.09546356723528437	0.1487195426174233
6	Ripper $_G M_t st$	0.12618154944240492	0.33278833336993885	0.3785446483272148	0.1645990834974771	0.27026630764908194
7	UCSG $_G M_t st$	0.5560850483128712	0.8029395156686141	0.6593029712726057	0.6047116397455345	0.6200893868755397
8	GAssist $_G M_t st$	0.6593029712726057	0.8029395156686141	0.6593029712726057	0.6593029712726057	0.6593029712726057

Table 12: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	C45Rules $_G M_t st$	0.08355176378863968	0.6684141103091175	0.6684141103091175	0.6120902122544742	0.5848623465204777
2	SIA $_G M_t st$	0.08744145889349632	0.6995316711479705	0.6684141103091175	0.6120902122544742	0.6120902122544742
3	Oblique-DT $_G M_t st$	0.21078092358267855	1.6862473886614284	1.2646855414960714	0.7828342703229381	0.7828342703229381
4	REGALTC $_G M_t st$	0.31206295462639877	2.496503637011119	1.560314773131994	0.7828342703229381	0.7828342703229381
5	REGAL $_G M_t st$	0.5042089892228903	4.033671913783122	2.016835956891561	0.7828342703229381	0.7828342703229381
6	Ripper $_G M_t st$	0.710737238590261	5.685897908722088	2.132211715770783	0.7828342703229381	0.7828342703229381
7	UCS $_G M_t st$	0.773550354190145	6.18840283352116	2.132211715770783	0.7828342703229381	0.7828342703229381
8	GAssist $_G M_t st$	0.7828342703229381	6.2626741625835045	2.132211715770783	0.7828342703229381	0.7828342703229381

Table 13: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	C45Rules $_G M_t st$	0.08355176378863968	0.5024193103246832	0.5819475935961527	0.5024193103246832	0.27784138137666814
2	SIA $_G M_t st$	0.08744145889349632	0.5024193103246832	0.5819475935961527	0.5024193103246832	0.2870630181245431
3	Oblique-DT $_G M_t st$	0.21078092358267855	0.7583507537087386	0.7828342703229381	0.5024193103246832	0.4925401845700285
4	REGALTC $_G M_t st$	0.31206295462639877	0.845920988317181	0.7828342703229381	0.5267426216026397	0.5896561616593352
5	REGAL $_G M_t st$	0.5042089892228903	0.9395780700416425	0.7828342703229381	0.6745548249230024	0.6989557244143169
6	Ripper $_G M_t st$	0.710737238590261	0.9757965328339844	0.7828342703229381	0.8086962997165906	0.7659607339304277
7	UCS $_G M_t st$	0.773550354190145	0.9757965328339844	0.7828342703229381	0.8168424869370743	0.7807992287463759
8	GAssist $_G M_t st$	0.7828342703229381	0.9757965328339844	0.7828342703229381	0.8168424869370743	0.7828342703229381